

## **REMARKS**

### **Status of Claims**

Claims 2-28 are pending in this application with claims 26-28 being the only independent claims. Independent claim 26 has been amended to recite additional claim features, which can be found in Figs. 1 and 3 and the corresponding descriptions in the original specification. Additional amendments have been made to the claims to conform to U.S. patent practice without narrowing or substantively modifying any of these claims or any claim element contained therein. New independent claims 27 and 28 have been added and are supported respectively by the combination of claims 26 and 11 and by the combination of claims 26 and 16-18.

Reconsideration of the subject patent application, in view of the above amendments and the following remarks, is respectfully requested.

### **Overview of the Office Action**

Claims 11-15 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2-10, 19-25, and 26 have been rejected under 35 U.S.C. §102(e) as anticipated by Slater (US 2003/0015721).

Claims 16-18 have been rejected under 35 U.S.C. §103(a) as unpatentable over Slater in view of Nozaki (USP 5,744,828).

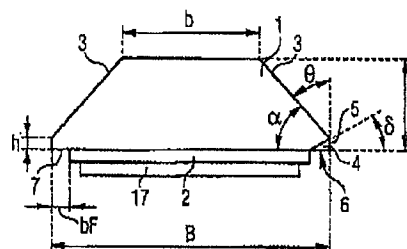
### **Summary of the Subject Matter Disclosed in the Specification**

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The specification discloses a radiation-emitting semiconductor component (see Fig. 1, reproduced herein) having a radiation-transmissive substrate (1) and a radiation-generating layer (2) arranged on the underside of the substrate (1). The substrate (1) has inclined side areas (3) adjoining a top side of the substrate which is remote from the radiation generating layer (2) and parallel to the underside of the substrate (1).

The refractive index of the substrate (1) is greater than that of the radiation-generating layer (2). The difference in refractive index results in an unilluminated

substrate region (4), into which no photons are coupled directly from the radiation-generating layer (2). The substrate (1) has essentially perpendicular side areas (5) in the unilluminated substrate region (4).



The semiconductor component so formed has an improved area yield from a wafer.

## Patentability of the Claimed Invention

### Independent Claim 26

Independent claim 26 now recites, *inter alia*, that “the inclined side areas adjoin a top side of the substrate which is remote from the radiation generating layer.” The above recited features of independent claim 26 are not taught by Slater as discussed below.

Slater discloses a light emitting diode including a substrate 20 and an epitaxial region 30 on the substrate 20 (see, e.g., Figs. 6 and 9 of Slater). In particular, Slater teaches gallium nitride-based light emitting diodes formed on silicon carbide-based substrates 20 (see, para. [0022]). The substrate 20 in Slater includes a first face 20a adjacent the epitaxial region 30 and a second face 20b opposite the epitaxial region 20 and having a smaller surface area than the first face 20a (see, paras. [0053] and [0054]). Part of the side areas of the substrate 20 are inclined.

Slater, however, does not teach the above recited features of amended independent claim 26. In Slater, the side areas of the substrate are partly inclined and partly perpendicular to the top side of the substrate 20. Only the perpendicular side areas in Slater adjoin the top side of the substrate 20, which is remote from the epitaxial region 30. The inclined side areas of Slater's substrate 20 do not adjoin either the top side or the underside of the substrate 20. Thus, Slater does not teach that "the inclined side areas adjoin a top side of the substrate which is remote from the radiation generating layer," as now recited in independent claim 26.

Additionally, Slater does not teach or suggest --and neither is there any apparent reason for-- modifying any of its perpendicular side areas so that they are inclined in relation to the substrate 20 to arrive at the claimed invention. Amended independent claim 26 is also therefore not rendered obvious by Slater.

In view of the above, independent claim 26 is deemed to patentably distinguish over Slater. The 35 U.S.C. §102(e) rejection of independent claim 26 should accordingly be withdrawn, and such action is requested.

#### New Independent Claim 27

New independent claim 27 has been added reciting those claim features previously presented in the combination of claims 26 and 11. As claim 11 has been found to contain allowable subject matter, new independent claim 27 should be allowable.

#### New Independent Claim 28

New independent claim 28 contains the claim features previously presented in the combination of claims 26 and 16-18. More specifically, new independent claim 28 recites, *inter alia*, that (i) "contact elements are arranged on the top side of the substrate" and (ii) "the interconnects have widths (bL1, bL2, bL3) that differ from one another in accordance with the

surface of the substrate that is to be energized.” The above recited features of new independent claim 28 are not taught by the cited art.

When rejecting claim 16 (which has been incorporated in new independent claim 28), the Examiner acknowledges that “Slater does not disclose expressly contact elements of a specific geometry formed on the top side of the substrate” (see page 4 of the Office Action). Nevertheless, the Examiner interprets the excitation electrode 20 in Nozaki as the contact elements recited in the claimed invention and takes the position that it would have been obvious to apply Nozaki’s excitation electrode 20 to the substrate of Slater. Applicants disagree.

As the Examiner recognizes in the Office Action, the excitation electrode 20 in Nozaki is formed on the contact layer 7. Nozaki’s excitation electrode 20 is not arranged on its substrate 1, as are the contact elements recited in new independent claim 28. Therefore, Nozaki’s excitation electrode 20 does not read on the claimed contact elements, which “are arranged on the top side of the substrate” as recited in new independent claim 28. Nozaki thus does not teach what Slater lacks, and fails to remedy the above-discussed deficiencies of Slater.

When rejecting claim 18 (which has also been incorporated in new independent claim 28), the Examiner interprets the current supply electrode 22 in Nozaki as the interconnects recited in the claimed invention. The Examiner states that Nozaki’s current supply electrode 22 reads on the claimed interconnects because the width of such current supply electrode 22 at the intersection of a square with a diagonal element is slightly wider than the width of a square alone (see page 5 of Office Action). Again, applicants disagree.

The current supply electrode 22 in Nozaki has different parts (see Fig. 1 of Nozaki). However, the widths of such electrode parts do not differ in accordance with the surface of the substrate that is to be energized, as do the interconnects recited in new independent claim 28.

Further, Nozaki does not teach or suggest that the different parts of its current supply electrode 22 have or should have their widths differing from one another in accordance with the surface of the substrate that is to be energized. In contrast, Nozaki expressly teaches that the current supply electrode 22 is evenly formed on the contact layer 7 (see col. 4, ll. 3-4 of Nozaki). Therefore, Nozaki does not teach that “the interconnects have widths (bL1, bL2, bL3) that differ from one another in accordance with the surface of the substrate that is to be energized,” as expressly recited in new independent claim 28. Accordingly, Nozaki fails to remedy the above-discussed deficiencies of Slater for these additional reasons.

In view of the foregoing, the radiation emitting semiconductor component recited in new independent claim 28 is not taught by Slater and Nozaki, whether taken individually or in combination. New independent claim 28 is thus allowable.

#### Dependent Claims 2-25

Claims 2-25 depend from independent claim 26 and, thus, are deemed to be allowable therewith.

In addition, claims 2-25 each include features that serve to still further distinguish the respective claimed invention over the cited art.

#### **Conclusion**

Based on all of the above, applicants submit that the present application is now in full and proper condition for allowance. Prompt and favorable action to this effect, and early passage of the application to issue, are once more solicited. Should the Examiner have any comments, questions, suggestions or objections, she is requested to telephone the undersigned to facilitate an early resolution of any outstanding issues.

Please charge the excess claim fees of \$ 104 in payment for two additional dependent claims and any other required fees or charges to our PTO Deposit Account No. 03-2412.

Respectfully submitted,  
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